

IN THE CLAIMS

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please **AMEND** claims 7, 8 and 15-17 and in accordance with the following:

1. (ORIGINAL) A storage area network management system comprising:
host computers, each comprising a storage area network management mechanism;
storage devices, each comprising a storage management mechanism;
switches coupled to the host computers and to the storage devices, said switches interconnecting the host computers and the storage devices, each of the switches comprising a region-setting mechanism; and
an integrated management mechanism integrating and controlling the storage area network, said integrated management mechanism including access route information of the host computers and the storage devices and, based on said access route information, transmitting access management information to the storage devices and the storage area network management mechanisms of the host computers, transmitting region information to the region-setting mechanisms of the switches, and transmitting access limit information concerning the host computers to the storage management mechanisms of the storage devices.

2. (ORIGINAL) The storage area network management system as in claim 1, wherein the integrated management mechanism obtaining a configuration status of the storage area network from each of the storage devices, the switches, and the host computers and stores said configuration status as storage area network configuration settings information, and wherein at regular intervals, or when instructed by a system administrator, the integrated management mechanism gathers current configuration status of the storage area network, compares the current configuration status to the configuration settings information that was collected, and detects discrepancies based upon the comparison.

3. (ORIGINAL) The storage area network management system as in claim 1, wherein the integrated management mechanism obtaining information on the access relationships from the host computer storage area network management mechanism, switches and/or the storage devices, and checking the compatibility of the access paths and, if the integrated management mechanism finds any access paths which are not set up correctly, sending out a notice about problems in a section corresponding thereto.

4. (ORIGINAL) Host computers in a storage area network system including storage devices and switches interconnecting the storage devices and the host computers, each of said host computers comprising:

an integrated management mechanism integrating and managing the storage area network system, and establishing access information for the storage devices based on access management information transmitted to the storage devices from the integrated management mechanism.

5. (PREVIOUSLY PRESENTED) Switches in a storage area network system including storage devices, host computers, and an integrated management mechanism integrating and managing the storage area network system, each of said switches comprising:

a region-setting mechanism carrying out region settings within the storage devices, based on region information concerning regions within the storage devices transmitted by the integrated management mechanisms, said switches interconnecting the storage devices and the host computers.

6. (ORIGINAL) Storage devices in a storage area network system including host computers and switches, and an integrated management mechanism integrating and managing the storage area network system, each of said storage devices comprising:

a storage management mechanism establishing conditions of access restrictions for the storage device based on access restriction information transmitted by the integrated management mechanism, said switches interconnecting the host computers and the storage devices.

7. (currently amended) An apparatus provided in a storage area network including storage devices including storage management mechanisms, host computers including storage area network management mechanisms, and switches having a region setting mechanism and interconnecting the storage devices and the host computers, said apparatus comprising:

integrated management mechanisms integrating and managing the storage area network system, transmitting access management information to the storage devices and to the storage area network management mechanisms of the host computers, transmitting region information to a switch region-setting mechanism of a switch, and transmitting access restriction information concerning the host computers to the storage management mechanisms of the storage devices.

8. (currently amended) A computer-readable medium including a program which program, when executed by a computer, causes the computer to execute the processes comprising:

integrating and controlling a storage area network including host computers and storage devices connected by switches, each switch having a region setting mechanism, through fiber channels, said processes further comprising:

transmitting access management information to the storage devices and storage area network management mechanisms of the host computers based on the access path information of the storage devices and the host computers,

transmitting region information to the region setting mechanisms of the switches,
transmitting access restriction information about the host computers to storage management mechanisms of the storage devices, and

managing access relationships between the hosts and storage devices.

9. (ORIGINAL) A storage area network system comprising:
computers comprising a storage area network management mechanism;
storage devices, each comprising a storage management mechanism;
switches interconnecting the computers and the storage devices, each of the switches comprising a region-setting mechanism; and

an integrated management device integrating and managing said storage area network, said integrated management device comprising access path information of the host computers and storage devices, said integrated management device transmitting access management information to the storage area network management mechanism of the host computers and to the storage devices, region information to the region setting mechanisms of the switches, and access restriction information about the host computer to the storage management mechanisms of the storage devices, wherein the integrated management mechanism detecting whether fiber channel adapters mounted on the storage devices and the host computers, the host bus adapters mounted on the host computers, or the switches in said storage area network management system are replaced, obtaining settings information following the replacement from the storage area network management mechanism of the host computers, the switch region-setting mechanism, or the storage device storage management mechanism, and reconfiguring the access relationships to be equivalent to the access relationships prior to the replacement.

10. (ORIGINAL) The storage area network system as in claim 9, wherein when the host bus adapter of the host computer fails and is replaced, the integrated management mechanism detects the replacement of the host bus adapter and notifies the system administrator, wherein if the system administrator issues a reconfigure command, the integrated management mechanism passes along the settings information from the new, replacement host bus adapter in the storage area network management mechanism of the host computer, and, using said new settings information, the integrated management mechanism configures the access relationships to be equivalent to the access relationships prior to the replacement of the host bus adapter and reconfigures the access relationships of the storage area network management mechanism, the region-setting mechanism, and the storage management mechanism.

11. (ORIGINAL) The storage area network system as in claim 9, wherein when the host computer fails and is replaced, the integrated management mechanism detects that the storage area network management mechanism of the host computer has no settings and notifies the system administrator, and if the system administrator issues a reconfigure command which passes along to the integrated management mechanism the settings information of the

connected host bus adapter, the integrated management mechanism uses that information to reconfigure the access relationships to be equivalent to the access relationships prior to the host computer replacement and then re-establishes the access relationships of the region-setting mechanism and the storage management mechanism.

12. (PREVIOUSLY PRESENTED) The storage area network system as in claim 9, wherein when a switch fails and is replaced, the integrated management mechanism detects that the region settings information that was set up in the switch is not present and notifies the system administrator, and if the system administrator issues a reconfigure command, said reconfigure command setting the access relationships prior to the replacement in the new switch and reconfiguring the access relationships.

13. (ORIGINAL) The storage area network system as in claim 9, wherein when a switch fails and is replaced, the integrated management mechanism detects that the region settings information that was set up in the switch is not present and the integrated management mechanism automatically sets up the access relationships prior to the failure in the new switch and then reconfigures the access relationships.

14. (ORIGINAL) The storage area network system as in claim 9, wherein when the storage device side fiber channel adapter is replaced and the fiber channel adapter settings information is changed, the integrated management mechanism detects this and notifies the system administrator, and if the system administrator issues a reconfigure command, the storage management mechanism passes along the new settings information to the integrated management mechanism and the integrated management mechanism uses that new settings information to reconfigure the access relationships so that the access relationships are equivalent to the access relationships prior to the replacement and then re-configures the access relationships of the storage area network management mechanism and the region management mechanism.

15. (currently amended) A storage area network system comprising:
host computers;

storage devices, each comprising a storage management mechanism;
switches, each having a region setting mechanism, interconnecting the host computers and the storage devices; and
an integrated management mechanism integrating and controlling the storage area network and comprising access path information of the host computers and storage devices, wherein using said access path information, the integrated management mechanism transmitting access management information to the storage devices and to the storage area network management mechanism, transmitting region information to ~~switch~~ the region-setting mechanisms ~~mechanisms of the switches~~, and transmitting access restriction information concerning the host computers to the storage management mechanisms of the storage devices, wherein when the storage area network management system is started up and the access path information has not been set up, the integrated management mechanism first sets up the region-setting mechanisms of the switches so that no access is permitted and, after that, the integrated management mechanism sets up regions on the regions setting mechanisms of the switches.

16. (currently amended) A storage area network system comprising:
host computers;
storage devices, each comprising a storage management mechanism;
switches, each having a region setting mechanism, interconnecting the host computers and the storage devices; and
an integrated management mechanism integrating and controlling the storage area network and comprising access path information of the host computers and storage devices and, using said access path information, said integrated management mechanism transmitting access management information to the storage devices, region information to the ~~switch~~ region-setting mechanisms of the switches, and access restriction information concerning the host computers to the storage management mechanisms of the storage devices, wherein the integrated management mechanism establishing specified fiber channel transfer classes using the storage area network management mechanism of the host computers whose access information has been set up, and the storage management mechanism of the storage devices such that the host bus adapters of the host computers and the fiber channel adapters of the storage devices operate using the same transfer class.

17. (currently amended) A storage area network system comprising:
host computers;
storage devices, each comprising a storage management mechanism;
switches, each having a region setting mechanism, interconnecting the host computers
and the storage devices; and
an integrated management mechanism integrating and controlling the storage area
network and comprising access path information of the host computers and storage devices
and, using said access path information, the integrated management mechanism sends out
access management information to the storage devices and the storage area network
management mechanisms, region information to the ~~switch~~-region-setting mechanisms of the
switches, and access restriction information concerning the above host computers to the storage
management mechanisms of the storage devices, wherein when a problem occurs in the
storage area network system the integrated management mechanism receives problem
information and, for a specified period of time, waits to see if there are other problem reports by
checking problem reports received during the specified period and investigating relationship
between the received problem reports and the problem report received first, and if the integrated
management mechanism determines that the received problem reports and the problem report
first received are related, the integrated management mechanism transmits a single report
concerning one affected area according to a problem report method definition set up in advance
in the integrated management mechanism.

18. (ORIGINAL) The storage area network system as in claim 17, wherein the
storage area network system presents related problem reports that the storage area network
system receives as related problems in addition to the single problem area.

19. (ORIGINAL) The storage area network system as in claim 17, wherein in addition
to the settings information for the access paths, the integrated management mechanism also
obtains and stores host-side logical volume information used in the access paths from the
computer storage area network management mechanism, and wherein when there is a report of
a problem from within the storage area network, said access paths are used to read in the

logical volume based on the access path information using said problem area, and report on the logical volumes that are affected by the problem.

20. (ORIGINAL) A method of a storage area network system, comprising:
integrating and controlling the storage area network by an integrated management mechanism managing access relationships between host computers of the storage area network and storage devices of the storage area network.

21. (ORIGINAL) The method as in claim 20, further comprising:
establishing access paths between the host computers and the storage devices, said access paths being established and controlled by the integrated management mechanism.

22. (ORIGINAL) The method as in claim 21, further comprising:
controlling by the integrated management mechanism access to regions of the storage devices by the host computers.

23. (ORIGINAL) The method as in claim 21, further comprising:
establishing by the integrated management mechanism storage affinity based on the access paths.

24. (ORIGINAL) The method as in claim 23, further comprising:
establishing zoning for switches interconnecting the host computers and the storage devices of the storage area network.

25. (ORIGINAL) The method as in claim 24, further comprising:
establishing settings in storage management mechanisms of respective storage devices.

26. (ORIGINAL) The method as in claim 20, wherein the integrated management mechanism integrates related, reported problems into a single problem report.